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# Oral health knowledge, attitude, and performance of teachers and healthcare workers in special schools for the disabled children in Isfahan

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## Abstract:

Oral health is an important aspect of general health, and is of great importance, especially in disabled children. A school is an ideal place for the implementation of preventive programs. Considering the significance of the prevention of dental caries and periodontal disease in disabled children, and the important role of teachers in the oral health promotion of students, this study aimed to assess the oral health knowledge, attitude, and performance of teachers and healthcare workers in special schools for the disabled children in Isfahan. This descriptive-analytical study evaluated the oral health knowledge, attitude, and performance of 172 teachers and healthcare workers of special schools for disabled children in Isfahan using a questionnaire. The participants were selected using census sampling. Quantitative and qualitative data were analyzed using SPSS via the Chi-square test, t-test, and Pearson's correlation coefficient at  $P < 0.05$  level of significance. The mean score of knowledge and attitude of teachers was 72.2% and 80.5%, respectively. The mean score of knowledge of healthcare workers was significantly higher than that of teachers ( $P = 0.007$ ). Age had no significant correlation with the knowledge score ( $P = 0.41$ ) but was significantly correlated with the attitude score ( $P = 0.01$ ). Work experience had a significant correlation with the knowledge ( $P = 0.02$ ) and attitude ( $P = 0.005$ ) scores. In addition, the educational level had a significant correlation with the knowledge ( $P < 0.001$ ) and attitude ( $P = 0.007$ ) scores. The findings of this research showed that work experience had a significant correlation with the knowledge and attitude scores, which can be due to more contact of teachers with longer work experience with disabled children and their higher perception of hygienic needs and problems of these children.

## Keywords:

Attitude, disabled children, knowledge, oral health, special care schools, teachers

## Introduction

Good oral health is a critical component of overall health. For many children with developmental disabilities, their smile is probably the most effective way of interacting with the world.<sup>[1]</sup> The provision of oral healthcare is challenging for such patients. According to the International Classification of Impairments, Disabilities, and Handicaps (ICIDH), impairment is defined as any loss or abnormality of a

psychological, physiological, or anatomical structure or function, and disability as any restriction or lack (resulting from an impairment) of ability to perform an activity in a manner or within the range considered normal for a person.<sup>[2]</sup>

Factors such as the nutritional regimen, eating habits, medication intake, physical limitations, and inability to brush their teeth as well as the attitude of the parents and caregivers regarding healthcare and oral health measures often result in poor oral hygiene in disabled children.<sup>[3]</sup> Several

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studies have reported poor oral hygiene in disabled individuals compared with their healthy peers.<sup>[4-9]</sup> Although school-based oral health education has been found to be effective in promoting oral hygiene and improving oral health knowledge and practices, the socioeconomic background is an important determinant for the same.<sup>[10]</sup>

The optimal efficacy of school-based oral health programs has been repeatedly emphasized in the health-related literature.<sup>[10-12]</sup> Also, the school-based approach is more effective and efficient than the community-based approach in the provision of preventive and therapeutic oral health services.<sup>[13]</sup>

Disabled children are not capable of making independent decisions and due to their physical and mental limitations, they often require the help and supervision of parents or their caregivers for daily activities such as oral hygiene maintenance. These limitations include not having adequate hand skills and not being able to comprehend complex tasks.<sup>[14]</sup> Teachers can also play an active role in the oral health promotion of children since they have daily contact with students and their families. However, lack of education and support in this respect is a great obstacle to the effective implementation of educational healthcare programs at schools.<sup>[15]</sup> Teachers with good oral hygiene and adequate knowledge about oral health can encourage students to adhere to oral hygiene measures and promote their oral health.<sup>[16]</sup>

Studies on the oral health knowledge, attitude, and performance of teachers and healthcare workers of special schools for disabled children are limited in Iran. Nachvak evaluated the special schools for disabled children in 14 provinces of Iran, including Isfahan, and showed that the mean oral health knowledge score of healthcare workers in such schools was lower compared with the knowledge score of healthcare workers in other health centers. Also, the mean knowledge score of healthcare workers with a college degree was lower than the mean knowledge score of healthcare workers with a bachelor's degree; this finding highlights the significance of a higher level of education of healthcare workers especially those with a college degree.<sup>[17]</sup>

Considering the significance of prevention of oral and dental conditions in medically compromised and disabled children and the important role of teachers and healthcare workers of special schools in the promotion of oral health of disabled children, this study aimed to assess the oral health knowledge, attitude, and performance of teachers and healthcare workers of special schools for the disabled children in Isfahan. The results of this study can aid in designing and implementing of programs by the authorities to promote the oral health of disabled children.

## Materials and Methods

### Study design and setting

This descriptive, cross-sectional study evaluated teachers and healthcare workers of special preschools and elementary schools for disabled children in Isfahan city.

### Study participants and sampling

Considering the small study population, the participants were selected using census sampling. Thus, our study population comprised of all teachers and healthcare workers of 26 preschools and elementary schools for disabled children in the six districts of Isfahan city, which included a total of 234 individuals. After applying the exclusion criteria, 174 subjects remained in the study; out of which, two were excluded due to incomplete questionnaires.

The inclusion criteria included teachers and healthcare workers of preschools and elementary schools for disabled children in the six districts of Isfahan city. The exclusion criteria were unwillingness to participate in the study and absence during the administration of the questionnaires.

### Data collection tool and technique

Data were collected using a questionnaire. The questionnaires were administered by the researcher, and some oral hygiene posters and brochures were also provided to encourage the participation of teachers and healthcare workers in the study.

A questionnaire comprising 28 questions was used for data collection.<sup>[18]</sup> This questionnaire had been designed in a doctoral thesis and was translated from English to Farsi using a forward-backward standard translation method. The questionnaire was then evaluated on 20% of the study population to assess its internal consistency, and Cronbach's alpha was calculated to be 0.7. The reliability of the questionnaire was assessed by the test-retest reliability method on 20% of the study population and the kappa coefficient was calculated to be 0.8, which was acceptable.

The questions were categorized into four domains of demographic information and oral health knowledge, attitude, and performance regarding disabled children. The questions were close-ended and the respondents were requested to choose the answer choice that best expressed their opinion.

The demographic domain asked for the age, gender, work experience, and level of education of teachers and healthcare workers. The second domain included questions regarding the level of knowledge of respondents about the preventive measures for oral diseases by

emphasizing on nutrition, plaque control methods, and also caries prevention measures such as fluoride therapy and fissure sealant therapy. The third domain included questions regarding the attitude of individuals towards the effect of cariogenic factors on primary and permanent teeth, the significance of implementation of caries prevention programs in special schools, and the willingness of teachers and healthcare workers to cooperate in the implementation of such programs. The fourth domain assessed the performance of teachers and healthcare workers when encountering oral and dental problems in children.

**Ethical Consideration:** This study had ethical approval from Esfahan University of Medical Science (IR.MUI.REC.1396.3.396) and all data in the questionnaires were confidential.

Qualitative and quantitative data were analyzed using SPSS (IBM Company Armonk, NY, U.S.A.). The mean and standard deviation of values were reported, and the frequency distribution tables and diagrams were drawn. Data were analyzed using the Chi-square test, *t*-test, and correlation coefficients at  $P < 0.05$  level of significance.

## Results

This study assessed the oral health knowledge, attitude, and performance of 172 children and healthcare workers of special schools for disabled children in Isfahan. Of all, 9 were healthcare workers and 163 were teachers. The mean age of teachers was  $42.3 \pm 6$  years (range 28 to 66 years). The mean age of healthcare workers was  $42.6 \pm 5.4$  years (range 32 to 49 years). The mean work experience of teachers was  $18.2 \pm 3.9$  years. The mean work experience of healthcare workers was  $18.4 \pm 7.9$  years. Of all, 9 were males and 163 were females. The level of education of teachers ranged from high-school diploma to master’s degree and the level of education of healthcare workers ranged from bachelor’s degree to master’s degree. According to the Mann–Whitney test, the level of education was significantly different between the two groups ( $P = 0.04$ ) such that the level of education of healthcare workers was significantly higher than that of teachers [Table 1].

The mean knowledge score of teachers was 72.2 while their mean attitude score was 80.5 out of 100. The mean knowledge score of healthcare workers was 92.6 and their attitude score was 86.4 out of 100. The Mann–Whitney test showed that the mean knowledge score of healthcare workers was significantly higher than that of teachers ( $P = 0.04$ ). The attitude score was not significantly different between the two groups ( $P = 0.17$ ).

The Pearson’s correlation coefficient showed that age had no significant correlation with the knowledge

**Table 1: Demographic information of participants**

Variable	Number	Percentage
Age		
<30 years	2	1.2
30–39 years	51	29.6
≥40	119	69.2
Work experience		
<10 years	36	21
10–19 years	36	21
≥20 years	100	58
Gender		
Male	9	5.5
Female	163	94.5
Occupation		
Teacher	163	94.5
Healthcare worker	9	5.5
Level of education		
High school diploma	4	2.3
College degree	21	12.2
Bachelor’s degree	125	72.5
Master’s degree	22	13

score ( $P = 0.41$ ) but was significantly correlated with the attitude score ( $P = 0.01$ ). The work experience of participants had a significant correlation with their knowledge ( $P = 0.02$ ) and attitude ( $P = 0.005$ ) scores. The Spearman’s correlation coefficient showed a significant correlation between the level of education and knowledge ( $P < 0.001$ ) and attitude ( $P = 0.007$ ) scores. Independent *t*-tests showed that the mean knowledge ( $P = 0.24$ ) and attitude ( $P = 0.09$ ) scores were not significantly different between males and females, although these scores were slightly higher in females.

Table 2 presents the frequency of responses to questions in the performance domain. The likelihood Chi-square test showed that according to the frequency of responses to questions 1 ( $P = 0.76$ ), 2 ( $P = 0.28$ ), and 3 ( $P = 0.07$ ), no significant difference existed in the oral health performance of the two groups. However, the frequency of responses to question 4 revealed a significant difference between the performance of teachers and healthcare workers ( $P = 0.03$ ). In other words, a higher percentage of healthcare workers mentioned pasteurized milk as the suitable storage medium for an avulsed tooth [Table 2].

## Discussion

Considering the significance of the prevention of oral and dental conditions in disabled children and the pivotal role of teachers and healthcare workers in the oral health promotion of these children, this study aimed to assess the oral health knowledge, attitude, and performance of teachers and healthcare workers of special schools for the disabled children in Isfahan. The results of this study can help in designing and implementing of programs

**Table 2: Frequency of responses to performance questions about oral health in the two groups of teachers and healthcare workers**

Question	Response	Teachers		Healthcare workers		P
		Number	Percentage	Number	Percentage	
1. What would you do if your student complains of pain in primary teeth?	1. I do not care	1	0.6	0	0	0.76
	2. I would use herbal medications for pain relief.	2	1.2	0	0	
	3. I recommend immediate dental visit	112	69.2	5	55.6	
	2 and 3	47	29	4	44.4	
2. What would you do if you notice that your student has a thumb-sucking or nail-biting habit?	1. I would talk to him and discuss the consequences of his action	21	13	1	11.1	0.28
	2. I would talk to his parents at the soonest time possible	35	21.6	3	55.6	
	3. I would refer him to school counselor	100	61.7	3	33.3	
	1 and 3	1	60.6	0	0	
	2 and 3	5	3.1	0	0	
3. What would you recommend if your student complains of gingival bleeding during tooth brushing or dental flossing?	I would recommend to quit tooth brushing and dental flossing for some time	8	5	0	0	0.07
	I would recommend him to continue tooth brushing and dental flossing and visiting a dentist as soon as possible	119	73.9	9	100	
	I have no idea	34	21.1	0	0	
4. In case of trauma to the jaw that resulted in tooth avulsion, what storage medium would you use for the avulsed tooth?	Alcohol	3	1.9	1	11.1	0.03
	Salt water	44	27.1	3	33.3	
	Pasteurized milk	56	34.6	5	55.6	
	I have no idea	59	36.4	0	0	

by the authorities to promote the oral health of disabled children.

According to our results, work experience had a significant correlation with the knowledge and attitude scores, which can be due to more contact of teachers with longer work experience with disabled children and their higher perception of hygienic needs and problems of these children. Our results showed that the level of education of participants had a significant correlation with their knowledge and attitude scores. Nachvak evaluated the level of knowledge of healthcare workers in special schools for disabled children in 14 provinces of Iran, including Isfahan, and reported that the mean knowledge score of healthcare workers about oral health was 50.28%, which was significantly lower than the value in our study.<sup>[17]</sup> In their study, the level of education of healthcare workers was a high-school diploma in 42.7% and bachelor’s degree in 56.5%. However, in our study, the level of education of 66.7% of healthcare workers was bachelor’s degree while the level of education of 33.3% was a master’s degree. The difference in the knowledge scores between the two studies can be due to employing healthcare workers with a higher level of education in recent years.

Regarding the knowledge of teachers about the fissure sealant treatment, only 39% picked the right answer while a recent systematic review regarding the efficacy of fissure sealant treatment for the prevention of caries in permanent teeth reviewed 38 randomized clinical trials and concluded that fissure sealants applied over the

occlusal grooves of permanent molars decreased caries by 11% to 51% during 24 months.<sup>[19]</sup> This rate of caries reduction is highly favorable for disabled children who have a high prevalence of caries.

Regarding the teachers’ attitude towards thumb-sucking by students, the majority of participants preferred to discuss such cases with the school counselor. According to Oliveira *et al.*,<sup>[20]</sup> of a total of 112 patients with Down syndrome, 19 had the thumb-sucking habit and it was correlated with the occurrence of posterior cross-bite and anterior open-bite in part of the study population. Thus, educational programs regarding the adverse effects of oral habits such as thumb sucking for counselors working in special schools for disabled children seem imperative. Danaei *et al.*<sup>[21]</sup> used educational pamphlets to enhance the knowledge of parents regarding the adverse effects of oral habits and obtained good results in raising awareness. Similar ideas seem to be suitable to enhance the knowledge of counselors in special schools for disabled children in this respect.

Regarding the performance of respondents and their reaction in emergencies such as tooth avulsion, only 34.6% chose pasteurized milk as the suitable storage medium for an avulsed tooth. The number of healthcare workers that gave the correct answer to this question was less than 50%. Danko Bakracic *et al.*<sup>[22]</sup> assessed the knowledge and performance of teachers in emergencies of dental trauma and reported that about half of the teachers had encountered dental trauma at least once in their work life. However, only 2% mentioned placing the



avulsed tooth in pasteurized milk. Since dental trauma commonly occurs in schools, it is imperative to enhance the knowledge of teachers and school workers regarding the management of emergencies.<sup>[23]</sup>

### Limitations and recommendation

Our study population only included teachers and healthcare workers of preschools and elementary schools for disabled children in Isfahan, and only teachers and healthcare workers that were working on the day of administration of questionnaires and were willing to participate in the study were enrolled. Some others were not willing to participate and this limited our sample size.

Since around 90% of participants believed that education and training of teachers regarding oral health can help in the prevention of oral and dental conditions in disabled children, educational programs in the form of brochures, posters, and pamphlets with suitable content are recommended to cover the following topics:

1. Significance of the conduction of fissure sealant therapy and other preventive procedures
2. Emphasizing on correct tooth brushing and dental flossing as the most effective measures to prevent gingivitis and periodontitis
3. Emphasizing on the role of snacks in the development of caries in children
4. Paying attention to oral habits such as thumb sucking or nail biting
5. Familiarity with the management of dental trauma in schools.

In addition, other environmental factors affecting oral and dental conditions in disabled children such as knowledge, attitude, and performance of the parents, socioeconomic status of the family, and degree of disability should be evaluated in future studies. Assessing these factors can better reveal the etiology behind the poor oral hygiene of these children.

### Conclusions

The current results revealed that the level of oral health knowledge of teachers in special schools for disabled children was generally moderate. However, considering their positive attitude towards it, they seem to be willing to cooperate in the implementation of preventive and even therapeutic programs in special schools for disabled children.

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### Conflicts of interest

There are no conflicts of interest.

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